Dometic

ENGLISH

REMOTE AUXILIARY AIR CONDITIONING AND AIR DISTRIBUTION SYSTEMS FOR VOLVO L-5 CHASSIS

INSTALLATION GUIDELINES

For Volvo Truck Models VN 770, 780, 830, 880

Dometic Corporation
Rev. 20090220
L-2485

WARNING:

Only trained technicians should perform these checks and tests. These units contain voltage of 12VDC, 24VDC, 115VAC and/or 230VAC. Some of these voltages can be lethal. These units also contain refrigerant under high pressure. Refrigerant circuits should only be accessed by licensed technicians.

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INTRODUCTION

This document contains supplemental guidelines for installing the Qt-series control and air distribution for the Dometic auxiliary air conditioning system for Volvo L-5 truck chassis. It is intended to be used in conjunction with the standard installation manual, which covers all other aspects of installing, testing and operating this system.

The instructions that follow represent years of development of parts and procedures to not only make the system perform well, but to also look “factory installed.”

Do not attempt to install any components until you read and understand the instruction in both manuals.

LOCATING THE COMPONENTS

The Dometic remote auxiliary air conditioning system consists of two basic components: an outside condenser/fan unit (CF), which contains the condenser and an exhaust fan, and an inside unit, which contains the compressor, heater, evaporator and blower (CHEB). The two units are connected by pre-charged refrigerant lines with quick-connect fittings.

Determine where best to install the CHEB (Fig. 1). Refer to the manual that came with the CHEB for more information. Keep in mind that the driver's side luggage box is probably one of the most used storage areas. Consider the passenger-side luggage box, then the center storage area, and lastly the driver's side box. Use the CHEB template to determine the best place to mount the unit.

The Dometic CF may be installed either under or behind the sleeper (Figs. 2a-2b). If you plan to install on a truck that has full fairings, and the generator is installed under the fairings, it is recommended that the CF be mounted on the rear of the truck. For rear cab mounting, order Part 710035048 which contains the proper blind threaded fasteners.

IMPORTANT!
Refer to the Dometic installation manual for details on installing and connecting the CHEB and CF.

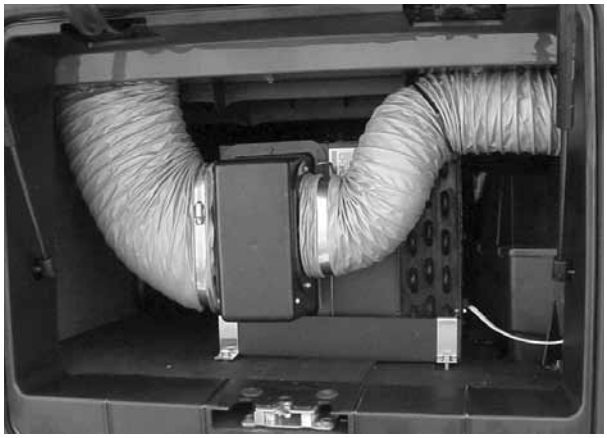


Figure 1 – CHEB installed in luggage compartment

Figure 2a – CF mounted under truck

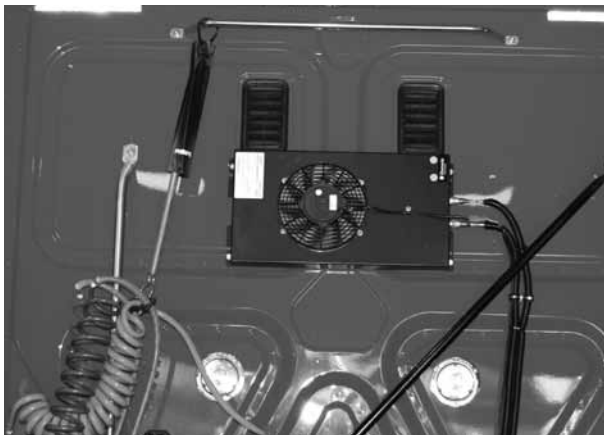


Figure 2b – CF mounted on back of sleeper

INSTALLING THE CONTROL

Installing the Qt Control/Display Panel

Mount the control in such a location as to give the driver good access. The suggested location would be near the current HVAC controls (Fig. 3). Route the interconnect cable (CXP) through the wall and into the luggage compartment. Remove the factory HVAC control panel to do this. Route the CXP cable to the rear of the bunk for later connection.

Installing the Power Logic Box

The Power Logic Box (PLB) will be mounted in the driver's side compartment, on the interior bunk wall (Fig. 4a). To accomplish this, you will have to drill holes through the bunk wall to match the holes in the PLB mounting plate. Use four #10 machine screws with locking nuts to secure the box (Fig. 4b).

Replacing the TSEP

The TSEP (Temperature Sensor) that is pre-installed near the air intake of the CHEB is too short (5') for this model truck. There is a longer cable (10') supplied in the kit. Replace the TSEP5 with the new TSEP10. Run this sensor cable to the PLB you just installed and plug it into the plug marked TSEP.

Routing Cables

The box has a couple of different types of cables:

- Wires enclosed in split loom
- Flexible power cables
- Phone-type cables

The "wires in split loom" will go toward the CHEB unit. The flexible power cord(s) will go toward the power distribution panel. The phone cable mounted on the CHEB unit plugs into the hole marked "TSEP". The phone cable from the Qt Control/Display plugs into the hole marked "Display".

We suggest directing the cables in the direction you wish them to go before mounting the box. All cables should be neatly routed and clipped, to prevent chaffing.

IMPORTANT!
Refer to the Dometic installation manual for details on routing and connecting cables from the Qt Control/Display panel to the PLB and CHEB.

Figure 3 – Qt Control/Display panel mounted

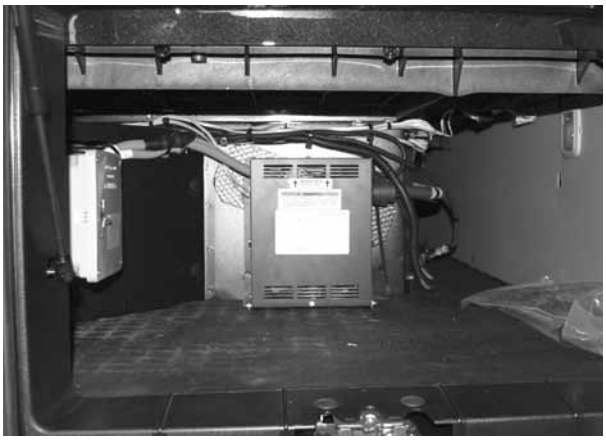


Figure 4a – PLB mounted under the bunk

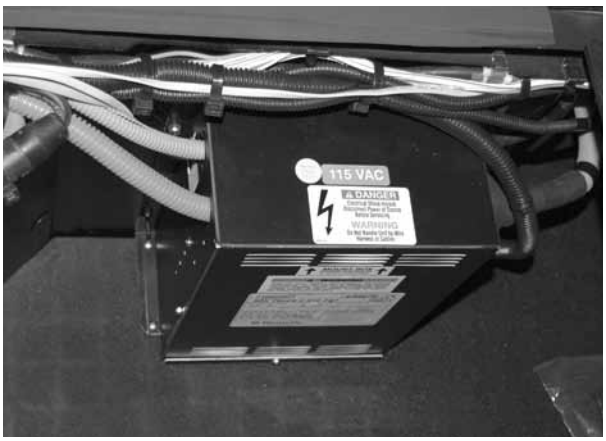


Figure 4b – Fastener locations on PLB

INSTALLING THE RETURN AIR VENT

The return air vent supplied should be installed under the bunk in the side panel, either on the passenger's or driver's side. The passenger's side is suggested, as there is less of a chance that it will get blocked by something in the luggage compartment. To install, locate the area shown (Fig. 5).

The grille will just fit between the panel supports on the backside of the kick panel. Locate the supports and cut out for the grille (Figs. 6-8). Dometic recommends using a hole saw and reciprocating saw to cut out the hole. If you have been given the 12.5" x 5.5" grilles instead of the one large grille, use a 4" hole saw to cut at least two holes behind each grille. Use of the reciprocating saw is optional for those grilles.

Remember, good air flow from the return air grille to the CHEB evaporator coil is critical for your air conditioning system to perform correctly. Do not allow anything to block this air flow.

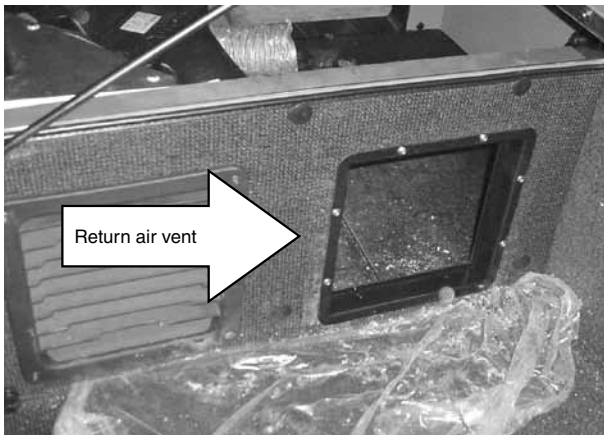


Figure 5 – Return air vent location

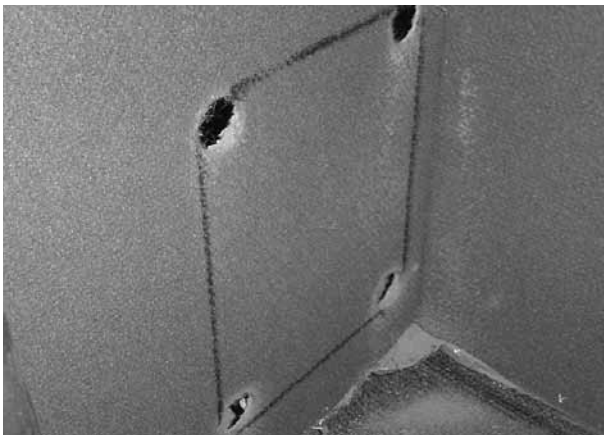


Figure 6 – Location for cutting return air vent

Figure 7 – Return air vent hole cut

Figure 8 – Return air grille flange installed

INSTALLING THE SUPPLY AIR DISTRIBUTION

For this installation, you will need to install a custom air plenum, as well as use the Volvo ductwork. A 4" duct will feed the Volvo ductwork, and a 6" (for the 14K system) or 4" (for the 10K system) will feed the custom air plenum.

Volvo Ductwork

To feed the Volvo ductwork, you will have to remove the passenger's side window footwell and a section of the duct, as shown (Figs. 9 and 10). The duct is secured from the top by “star” screws (Fig. 10). Below, there is a sensor which must be removed (Fig. 11). Remove the duct from the truck, and cut a 4" hole into it as shown (Fig. 12).

Find the V4 RND BLACK 4" grille. Use two cable ties to secure the vanes so that they will not turn. Use a piece of the weather stripping supplied under the lip of the grille, so that once installed, no air will leak. Install the grille from the inside of the duct, with the vanes pointing upward. Push the duct and grille back into the hole from which it came. Have someone operating from the outside of the truck reach into the luggage compartment and push the length of the 4" duct and one hose clamp over the grille. Push the duct over the grille until the grille is tight against the duct, then tighten the clamp. Replace the duct and tighten the screws.

Figure 9 – Remove window footwell

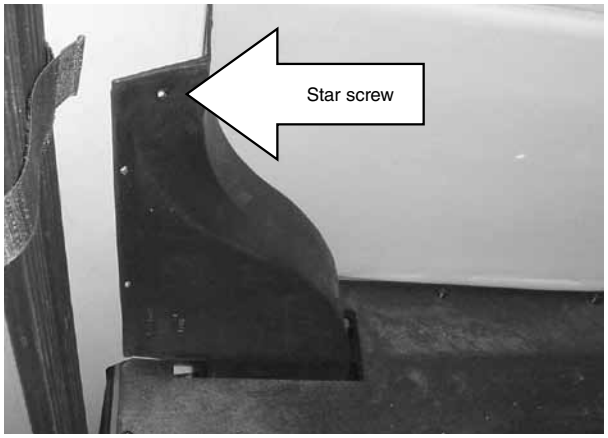


Figure 10 – Star screws

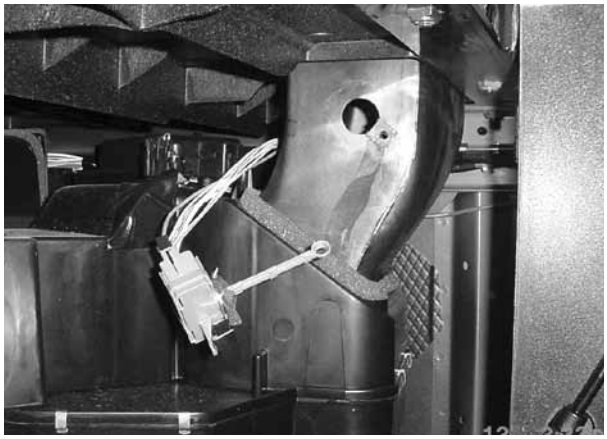


Figure 11 – Sensor removed

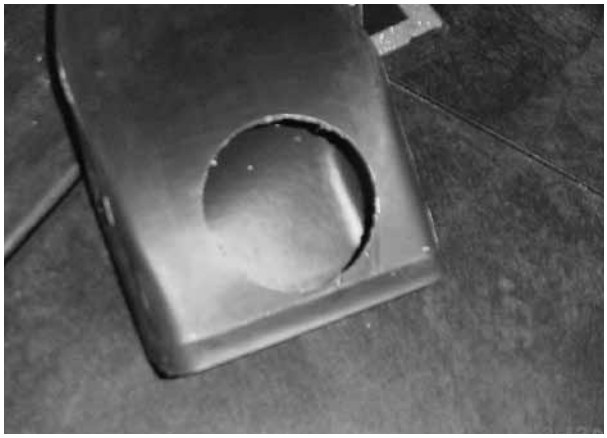


Figure 12 – 4" hole cut into duct

Custom Air Distribution Plenum

First, find the metal custom plenum and the passenger's side window footwell. Find the four V4 RND BLACK grilles. Line the grilles up on the window footwell and mark the holes for cutting. Use a 4” hole saw to cut the holes (Fig. 13).

Find the four (or three for a 7,000 or 10,000 BTU/hr system) round black grilles, part number 717650005.

Preparing to Mount the Footwell and Air Plenum

Before mounting the footwell back into the truck, first cut out for the duct to extend below the bunk surface. Use a 1/8" bit to drill the locator holes from under the bunk. Go to the passenger's side luggage door and look up to the rear corner of the bunk. Find the metal support that holds the bunk and drill right at the edge of the side of the truck towards the rear. Use the supplied template to cut the holes.

(Full size template supplied. See insert.)

Reinstalling the Footwell

Gently insert the duct into the hole. Direct it down-ward, while pushing the footwell toward the window. Once it is all the way down, put the top flange of the footwell behind the window fascia. Fasten the foot-well to the wall and floor.

Installing the Plenum on the Front of the CHEB

Using a 1/4" nut driver, remove the plastic 7" oval hose adaptor. Find the 4" x 6" (or 4" x 4") distribution plenum. Install weather stripping on the contact surfaces and place over the hole on the unit (Fig. 15). Reinstall the screws into the new plenum.

IMPORTANT!
Refer to the Dometic installation manual for details in connecting ductwork to the discharge grilles.

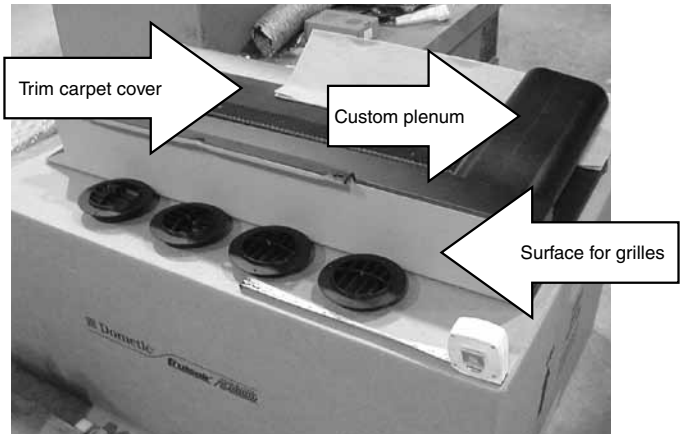


Figure 13 – Grilles lined up for hole cutting

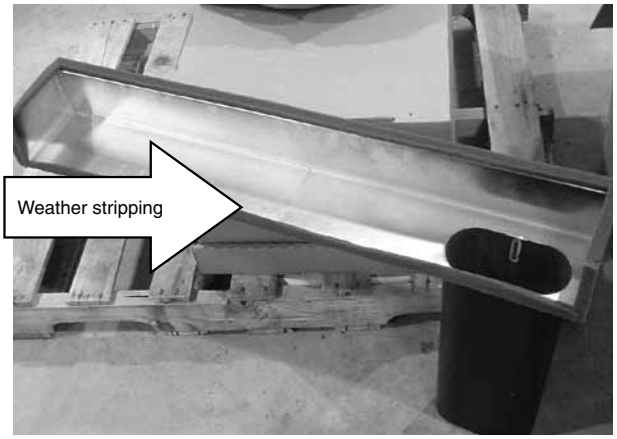


Figure 14 – Weather stripping on plenum

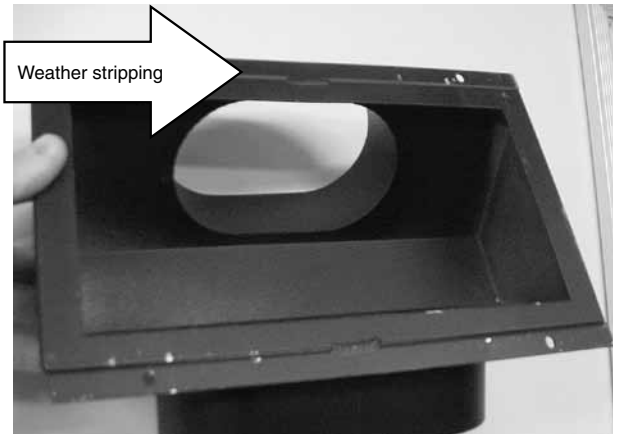


Figure 15 – Plenum

INSTALLING THE CHEB

Install the CHEB on the passenger's side of the truck. First, get out the CHEB template. Place the template with the “edge of the unit” 1" to 1-½" from the factory HVAC unit mounting foot. The “edge of the unit” line with the notations for the quick connections should be nearest the bunk wall (Fig.16). The line of the “edge of the unit” should be approximately 5" from the bunk wall. Mark for the two quick connect holes 3-½" off the “edge of the unit” using the construction lines. Drill through the rubber mat with a 2-½" hole saw (DO NOT DRILL THROUGH THE METAL.) Then drill through the metal with a 1-7/8" holesaw.

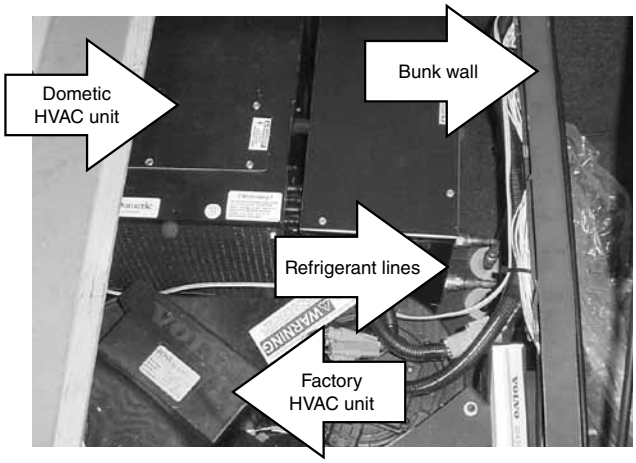


Figure 16 – CHEB installed under bunk

Drill the drain hole with a 1-5/8" hole saw.

Drill for mounting brackets for the CHEB, these suggestions work well:

- One inboard on the CHEB at the corner nearest the rear of the truck
- One on the front, outboard
- One on the outboard near the air distribution plenum
- One on the front of the CHEB, inboard (near the factory HVAC unit)

Use the “edge of unit” line to situate one of the mounting brackets for hole marking. Be sure your bracket is located in an area noted by “xxxxx”, which gives locations available for mounting.

Install the watertight grommets (grey) into the two 1-7/8" holes. Push in until they lock in the hole.

Insert the CHEB unit into the truck. Make sure that the drain fitting is lined up with the hole. Install the brackets by using one ¼"-20 x 2-½" bolt (provided) and one small washer from the top. Secure underneath the truck with one large washer, and one nylok nut. Snug all bolts, to the point where the bracket just starts to bend, then stop.

Push the condenser fan cord down through one of the grey grommets. Then insert the refrigerant lines into their respective grommets. Lightly lubricate one side of each coupling with light oil or refrigerant oil. Be sure to get the face and the threads. Hand tighten the quick connects, making sure they thread up correctly. Tighten with the correct wrenches (13/16", ¾", and 15/16") Tighten to 10-12 ft-lbs. If any hissing is heard during the tightening process, DO NOT STOP TIGHTENING. It is because the fittings are not quite in line correctly. Keep tightening, and the hissing will stop.

Connect the TSEP (temperature sensor cord located on CHEB) to the PLB. Connect the electrical connectors between the CHEB and PLB (ones in the split loom.) Route and clip to prevent chafing.

Connect the ductwork to the CHEB, use the hose clamps to secure. It may be tough to get the 6" duct on, but it will go. Use only as much duct as you have to, as extra duct will impede air flow (Fig. 17).

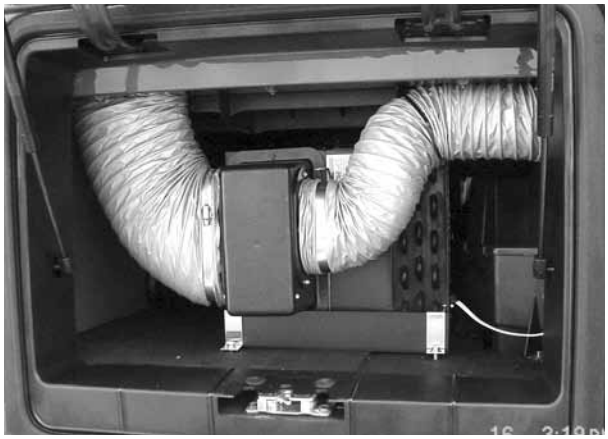


Figure 17 – Ductwork conected to the CHEB

Install the 3/8” drain fitting into the bottom of the CHEB from the under side of the truck, finger tighten. Place the hose clamp over the end of the P-trap. Push the end of the P-trap over the drain fitting, and tighten clamp.

Installing the Condenser

The Dometic condenser may be installed either under or behind the sleeper. These installations (and the parts in the kit) are for an installation underneath the sleeper.

If you plan on mounting the generator and/or generator radiator underneath the sleeper fairings, we recommend mount the HVAC condenser on the rear of the sleeper.

First, mount the condenser to the mounting plate provided (Fig 18). The quick connects should be on the end of the mounting plate with the side extension (Fig. 19).Use the nylok nuts provided and snug all bolts. This mounting plate is specially designed to fit under the Volvo L-5 chassis. It mounts midline of the truck, just behind the transmission and in front of the exhaust pipe. The “fingers” of the plate fit up under a cab support. The rear flange slips over another support. Mount with the four SS self-tapping screws provided.

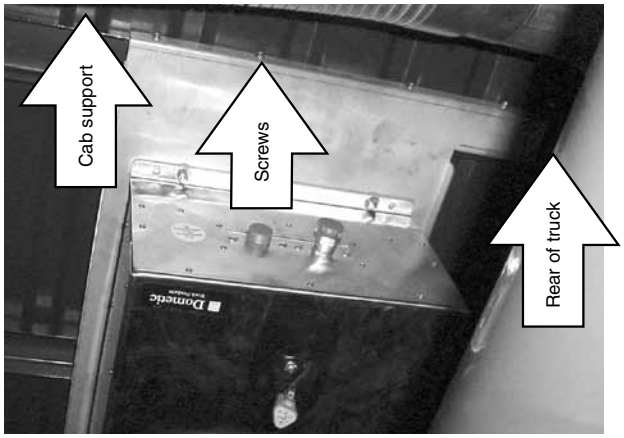


Figure 18 – Condenser mounted on mounting plate

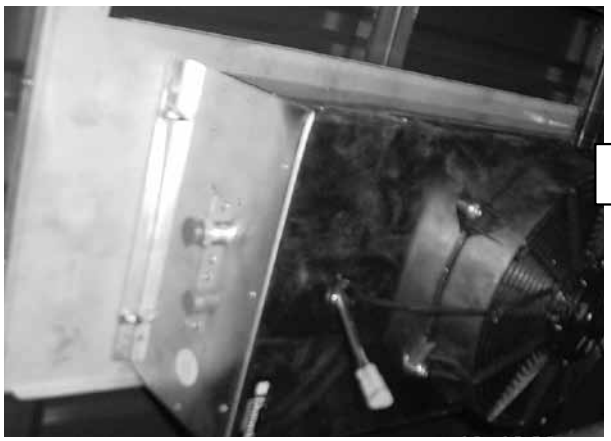


Figure 19 – Quick connects on end of mounting plate with side extension

Routing the Refrigerant Lines and Condenser Power Cable

Three refrigerant lines will pass over the exhaust pipe, then over top of the condenser mounting plate, and then back around to the quick connects. Connect the quick connects in the manner described previously. Secure the refrigerant lines as shown, with one cushion clamp on the mounting plate side extension, and one on the opposite side to prevent movement and chafing (Fig. 20). Use cable ties to secure the refrigerant lines to each other and to the condenser power cable. After connecting the condenser power cable, secure power cord in such a manner that the connections are pulled in a linear fashion, not to the side.

Install the heat shield as shown, using two 6" hose clamps (Figs. 21-23).

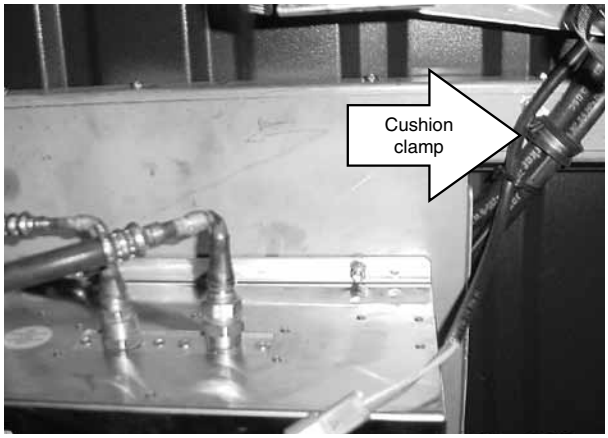


Figure 20 – Refrigerant lines secured with cushion clamp to prevent chafing on mounting side

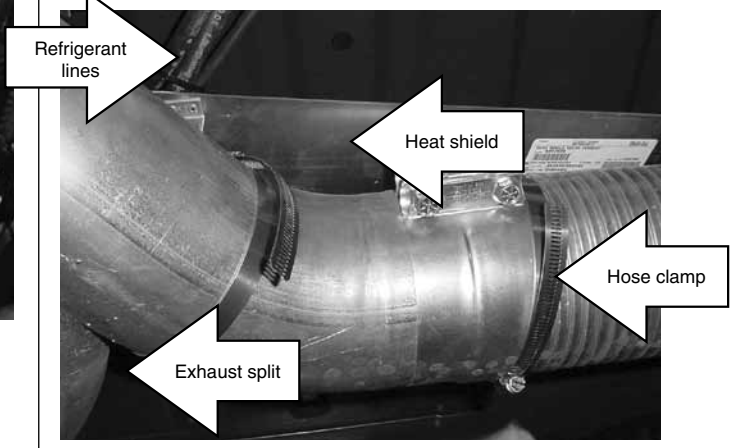


Figure 21 – Heat shield installed

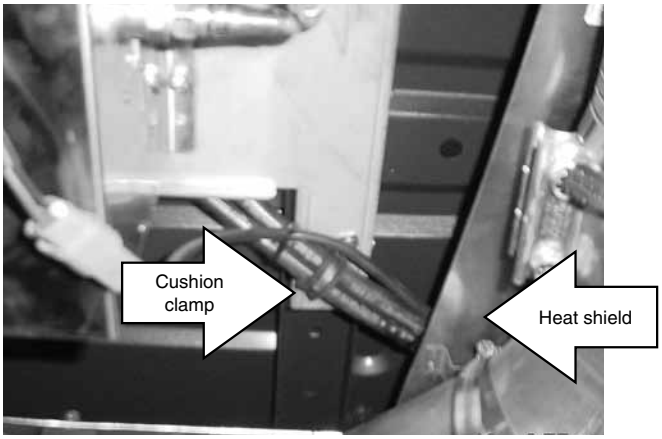


Figure 22 – Cushion clamps securing refrigerant lines from movement and chafing

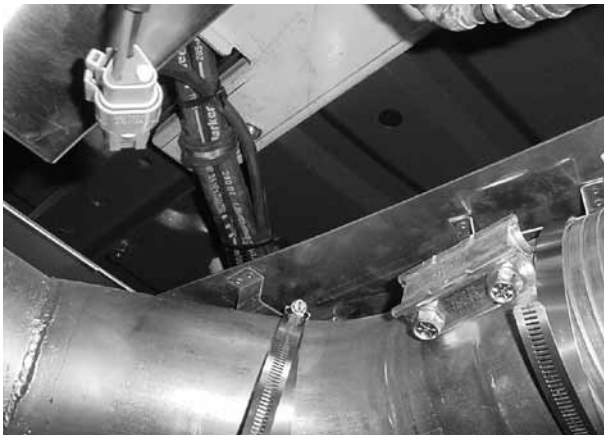
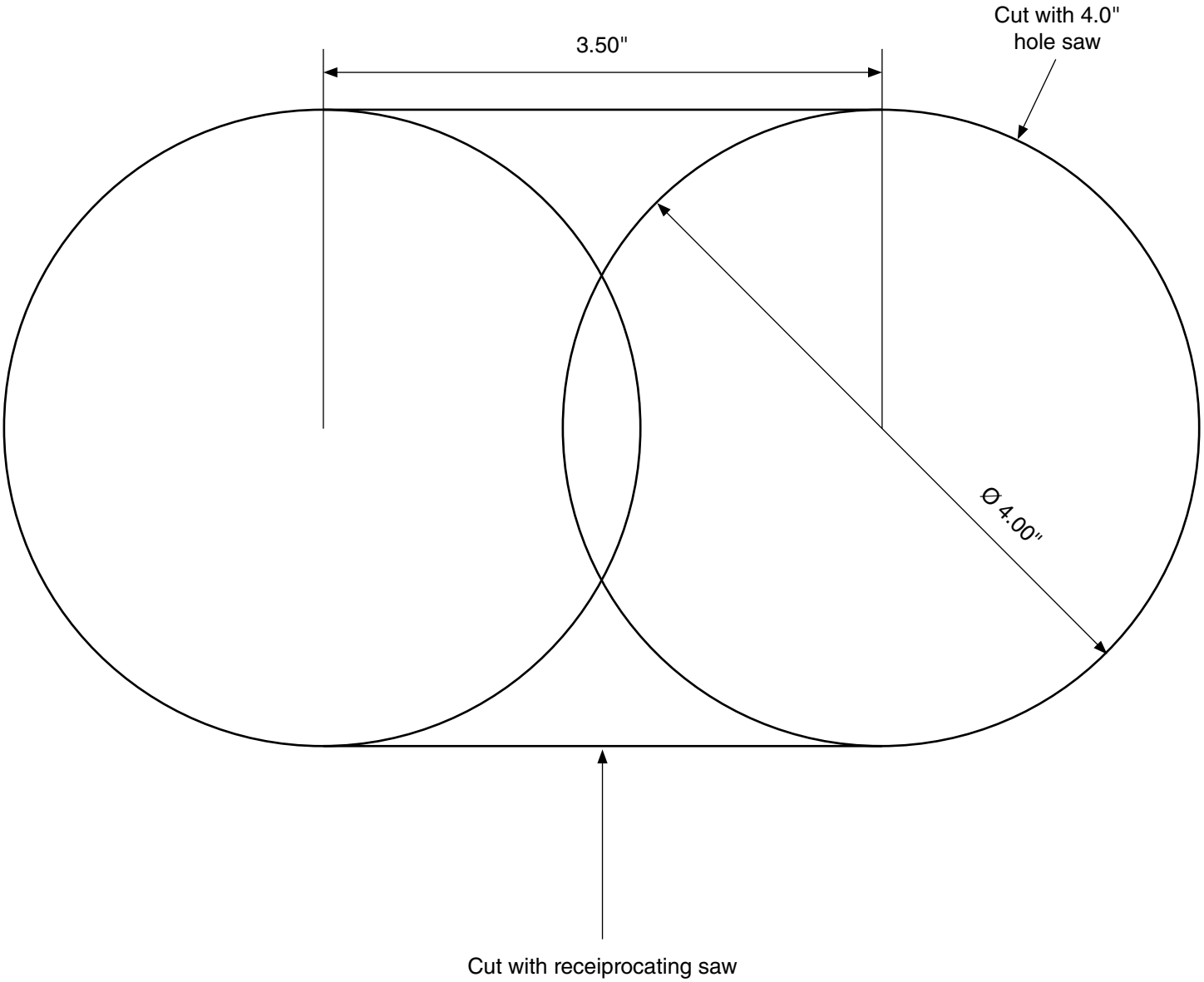


Figure 23 – 6" hose clamps securing heat shield

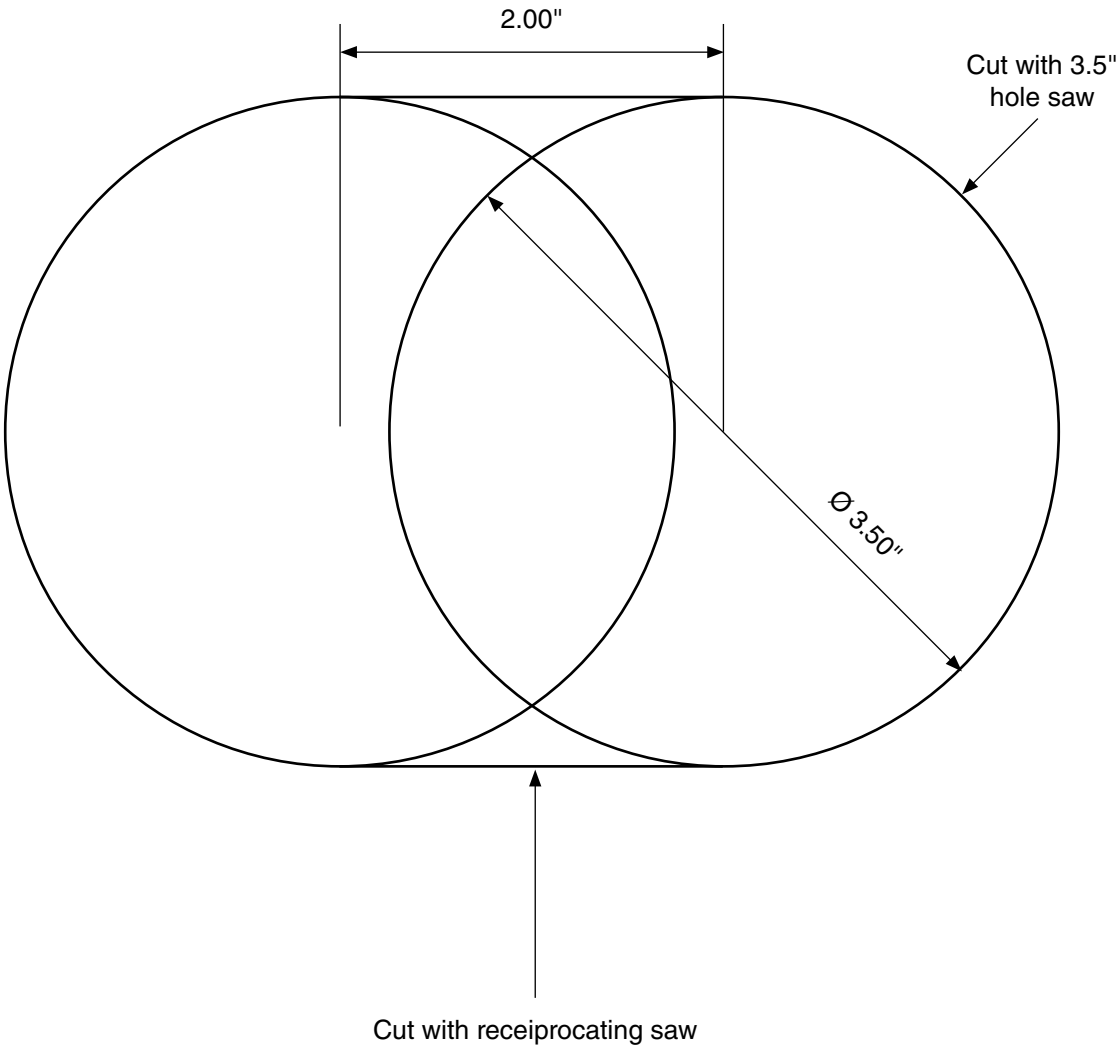
TESTING THE INSTALLATION

Supply power to the power distribution panel with either shorepower or generator power. Look at the display panel, and confirm that the display is lit up. Press the FAN button to activate the fan in manual mode. Check for airflow from all vents. Next, press the HEAT button, and run the SETpoint up sufficiently for the unit to come on in heat mode. The HEATING LED should illuminate. The air should start warming up. To confirm heating quicker. Next, check the cooling mode. Press the COOL button, then run the SETpoint down sufficiently for the unit to come on in the cool mode. The COOLING LED should illuminate. The air should start cooling down soon. Check to make sure the condenser fan is running. If it is cool, it may take a few minutes for the condenser fan to come on. This is normal. Shut down the unit by pressing OFF. You are now finished with the installation.

HOLE FOR 6" DUCT FOR 14K UNIT



HOLE FOR 4" DUCT FOR 10K UNIT



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